1896MNRAS..56..503P

Meridian Observations of Comet b 1896 (Swift), at Lower Transit at the Royal Observatory, Greenwich.

(*Communicated by the Astronomer Royal.*)

Mean Time of Observation.					Observer.	Observed R.A. of ☄.			Observed N.P.D. (Corrected for Parallax and Refraction).		
1896.	d	h	m	s		h	m	s	°	′	″
May	1	12	13	52	W. B.	2	55	30·97	36	11	56·92
	4	11	45	5	H. F.	2	38	29·07	31	39	23·33
	9	10	53	3	A. C.	2	6	1·35	26	6	48·94
	11	10	31	20	B.	1	52	8·29	24	27	57·76

The transit on May 4 was observed on four wires only, and these cannot be identified with certainty. It is possible that the R.A. should be diminished by one interval of the wires or $4^{s}\cdot7$.

The initials A. C., B., H. F., and W. B. refer to Mr. Crommelin, Mr. Bryant, Mr. Furner, and Mr. Bowyer respectively.

Cometary Observations at Liverpool Observatory, 1895.

By W. E. Plummer, M.A.

The following observations of Comets have been made with the Equatorial of the Liverpool Observatory during the year 1895. When the comet was sufficiently bright to admit of adequate illumination of the wires of a filar micrometer, the measures have been made with that instrument. With the fainter comets, or under unfavourable circumstances, a micrometer of thick wires, crossed at right angles and placed at an angle of 45° with the meridian, has been employed. In a few cases both forms of micrometer have been used, in order to judge of the relative accuracy of the two methods. Similar observations have also been made on nebulæ, and it appears that while the larger number of wires (nine) over which transits can be made with the filar micrometer gives a greater accuracy to the differences of Right Ascension, the declinations are fairly comparable in the two cases. Observations made with the crossed bars are marked "Ret.," and it has been usual to make five transits of the comet and comparison stars. All the observations have been corrected for differences of refraction, but no corrections for parallax have been applied, except in the case of Encke's Comet, mentioned in the Notes. The whole of the observations have been made by Mr. W. Plummer.

Encke's Comet.

Greenwich Mean Time of Observation.		☄−✱ R.A.	No of Comparisons (α)	Apparent R.A. of Comet.	☄−✱ Declination.	No. of Comparisons (δ)	Apparent Declination of Comet.	Log. Factor of Parallax in (α)	Log. Factor of Parallax in (δ)	Letter of Reference.
	h m s	m s		h m s	′ ″		° ′ ″			
1894. Dec. 19	6 8 35·3	+4 46·11	Ret.	22 16 57·74	+ 0 29·9	Ret.	+ 4 37 39·3	0·3168	0·8208	*a*
20	6 3 9·2	−2 20·54	Ret.	22 16 41·87	− 1 6·1	Ret.	+ 4 30 36·7	0·3108	0·8215	*b*
20	6 3 9·2	+ 24·95	Ret.	22 16 42·02	+ 0 17·3	Ret.	+ 4 30 39·2	0·3108	0·8215	*c*
27	6 2 21·0	+1 35·20	25	22 15 7·13	+ 3 20·4	5	+ 3 40 22·8	0·4198	0·8278	*d*
27	6 2 21·0	+ 50·21	25	22 15 6·90	− 3 25·7	5	+ 3 40 21·5	0·4198	0·8278	*e*
30	5 31 47·4	−1 18·46	Ret.	22 14 23·42	+ 8 15·4	Ret.	+ 3 17 32·6	0·3541	0·8292	*f*
31	6 4 20·1	−1 35·04	27	22 14 6·86	+ 0 12·2	6	+ 3 9 29·3	0·4759	0·8314	*f*
1895. Jan. 8	6 4 16·0	−3 2·59	15	22 10 17·74	+ 1 39·7	4	+ 1 47 30·8	0·5584	0·8394	*g*
18	6 10 3·5	− 24·36	20	21 55 55·21	− 2 44·3	5	− 1 40 39·2	0·6511	0·8519	*h*
22	5 39 20·0	−3 25·04	Ret.	21 43 50·67	+13 5·2	Ret.	− 4 16 10·8	0·6489	0·8584	*i*
22	5 39 20·0	+1 11·72	Ret.	21 43 50·31	+11 59·6	Ret.	− 4 15 58·9	0·6489	0·8584	*j*
23	5 36 22·1	+1 4·57	20	21 39 58·16	+ 7 52·9	5	− 5 4 59·1	0·6594	0·8597	*k*
23	5 36 22·1	−1 56·30	20	21 39 58·07	+ 0 49·5	5	− 5 4 57·8	0·6594	0·8597	*l*

Notes.

December 19.—The comet very feeble, without any noticeable condensation.
December 20.—Wind very troublesome: clock seconds frequently inaudible.
December 30.—Comet well seen: condensation marked.
January 8.—Moonlight, but the observation was thought satisfactory.
January 22.—Altitude very small: greater difficulty in seeing the comparison stars than the comet.
January 23.—Observation difficult: comet very low. The comet was seen on January 25, but no suitable star of comparison could be seen.

This series of observations has been compared with the accurate ephemeris prepared by Dr. O. Backlund, and given in *Ast. Nach.*, No. 3263. The distances from the Earth and the times for aberration have been interpolated from that ephemeris, and the resulting comparisons are as follows:—

1896MNRAS..56..504.

1896MNRAS..56..504.

Date of Observation.	Observed R.A.	Correction for Parallax.	Seconds of Geocentric R.A.	Seconds of Tabular R.A.	Error of Ephemeris. C−O	Observed Declination.	Correction for Parallax.	Seconds of Geoc. Decl.	Seconds of Tabular Decl.	Error of Ephemeris. C−O
1894.	h m s	s	s	s	s	° ′ ″	″	″		
Dec. 19	22 16 57·74	+0·16	57·90	57·89	−0·01	+4 37 39·3	+ 7·5	46·8	59·6	+ 12·8
20	22 16 41·87	+0·15	42·02	42·56	+0·54	+4 30 36·7	+ 7·5	44·2	47·7	+ 3·5
20	22 16 42·02	+0·15	42·17	42·56	+0·39	+4 30 39·2	+ 7·5	46·7	47·7	+ 1·0
27	22 15 7·13	+0·21	7·34	7·31	−0·03	+3 40 22·8	+ 7·9	30·7	42·7	+ 12·0
27	22 15 6·90	+0·21	7·11	7·31	+0·20	+3 40 21·5	+ 7·9	29·4	42·7	+ 13·3
30	22 14 23·42	+0·28	23·70	22·85	−0·85	+3 17 32·6	+ 8·0	40·6	53·4	+ 12·8
31	22 14 6·86	+0·24	7·10	5·53	−1·57	+3 9 29·3	+ 8·1	37·4	36·7	− 0·7
1895. Jan. 8	22 10 17·74	+0·31	18·05	15·60	−2·45	+1 47 30·8	+ 8·9	39·7	40·3	− 0·6
18	21 55 55·21	+0·44	55·65	51·45	−4·20	−1 40 39·2	+10·4	28·8	68·1	−39·3
22	21 43 50·67	+0·45	51·12	45·55	−5·57	−4 16 10·8	+11·1	59·7	93·6	−33·9
22	21 43 50·31	+0·45	50·76	45·55	−5·21	−4 15 58·9	+11·1	47·8	93·6	−45·8
23	21 39 58·16	+0·47	58·63	52·36	−6·27	−5 4 59·1	+11·3	47·8	84·1	−36·3
23	21 39 58·07	+0·47	58·54	52·36	−6·18	−5 4 57·8	+11·3	46·5	84·1	−37·6

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Swift's Comet (*a*) 1895.

Greenwich Mean Time of Observation.		☄ − ✶ R.A.	No. of Comparisons (α).	Apparent R.A. of ☄.	☄ − ✶ Declination.	No. of Comparisons (δ).	Apparent Declination of ☄.	Log. Factor of Parallax in (α).	Log. Factor of Parallax in (δ).	Letter of Reference.
1895.	h m s	m s		h m s	′ ″		° ′ ″			
Aug. 24	12 19 7·0	−1 24·97	Ret.	0 36 29·22	−8 44·2	Ret.	+ 5 51 20·6	0·4751	0·8165	*a*
27	12 58 30·3	+5 14·81	15	0 43 9·06	+1 21·6	4	+ 6 1 26·7	0·3193	0·8121	*a*
28	12 6 19·1	+3 10·42	15	0 45 11·50	−6 37·2	4	+ 6 3 50·2	0·4909	0·8158	*b*
28	12 6 19·1	−2 6·56	15	0 45 11·03	−2 15·3	4	+ 6 3 51·7	0·4909	0·8158	*c*
Sept. 23	12 2 5·7	−0 55·29	Ret.	1 20 1·21	+8 20·7	Ret.	+ 5 14 42·0	0·2564	0·8163	*d*
23	12 2 5·7	+0 23·92	,,	1 20 1·30	+3 40·8	,,	+ 5 14 41·3	0·2564	0·8163	*e*
25	11 58 53·0	+0 16·14	,,	1 21 12·65	−0 57·4	,,	+ 5 5 23·9	0·2377	0·8171	*d*
25	11 58 53·0	+1 35·02	,,	1 21 12·42	−5 38·7	,,	+ 5 5 22·0	0·2377	0·8171	*e*
26	11 40 13·4	−0 25·11	12	1 21 43·92	+3 2·4	4	+ 5 0 46·7	0·3135	0·8184	*f*
27	11 55 22·0	+0 5·14	Ret.	1 22 14·19	−1 46·2	Ret.	+ 4 55 58·2	0·2190	0·8180	*f*
27	11 55 22·0	−0 2·44	,,	1 22 14·11	+6 43·3	,,	+ 4 55 52·8	0·2190	0·8180	*g*
28	12 9 32·3	+0 24·65	,,	1 22 41·22	+1 57·4	,,	+ 4 51 6·9	0·1015	0·8179	*g*
Oct. 13	11 13 22·5	−0 51·81	,,	1 26 16·90	+6 3·5	,,	+ 3 49 7·2	0·1070	0·8246	*h*
13	11 13 22·5	−4 37·57	,,	1 26 16·57	+1 58·5	,,	+ 3 49 4·1	0·1070	0·8246	*i*
16	12 0 40·0	−0 33·44	,,	1 26 35·29	−2 43·9	,,	+ 3 40 19·8	8·7982	0·8249	*j*
17	11 0 22·0	−2 0·87	,,	1 26 40·84	+2 9·3	,,	+ 3 38 0·5	0·0888	0·8257	*k*
18	9 57 42·6	−0 32·35	,,	1 26 46·50	+2 34·5	,,	+ 3 35 53·7	0·3964	0·8279	*l*

Notes.

August 24.—Comet faint and ill-defined.

August 27.—Sky hazy, comet very faint.

September 23.—Individual measures discordant.

September 26.—Haze; the observation very unsatisfactory. The reticule micrometer was tried on this night but the results were very discordant.

September 28.—Transits very irregular and uncertain.

In October the comet was very faint, but the observations fairly accordant.